

that the Takikawa et al. reference "fails to disclose that the washer surrounds at least a portion of the cylindrical surface" of the connecting head of the pipe.

In an effort to overcome this admitted deficiency of Takikawa et al., the Examiner now turns to the newly cited Eidsmore reference. The Examiner notes that Eidsmore has a metal pipe 12 with a connecting head 22 and a cylindrical surface on the connecting head 22. The Examiner then states that Eidsmore shows "a sleeve washer or drive member" 70 with a portion 76 surrounding the cylindrical surface of the connecting head and another portion 74 surrounding the cylindrical body of the pipe. The Examiner concludes that it "would have been obvious to one having ordinary skill in the art at the time the invention was made to have a sleeve washer or drive means, as taught by Eidsmore, in a pipe assembly as described by Takikawa et al., in order to ensure tightening" (emphasis added).

It is respectfully submitted that a person having ordinary skill in the art would not be led to combine the Eidsmore and Takikawa et al. references and that the hypothetical combination of those references would not suggest the invention defined by the amended claims.

At the outset, the Examiner has used the word "or" to imply similar structures and functions for the claimed sleeve washer and the drive member of Eidsmore. In fact, a "sleeve washer" and a "drive member" normally would not be considered synonyms. In this regard, the term "drive member" implies a structure that performs a driving function, and in fact the conical outer surface of the drive member 70 in Eidsmore is configured to perform a driving function when used in combination with the coupling nut 18 that has a comparably inclined surface 54. As the two coupling nuts of Eidsmore are mated, the

inclined surface 54 rides axially along the inclined surface 78 of the drive member 70 to urge the portion 76 of the drive member 70 inwardly and against the cylindrical section 22 of the Eidsmore pipe 12.

It also should be noted that Eidsmore does not have an annular groove in the passage 28 of the pipe 12. It would seem, therefore, that the pipe 12 may be a machined element. The absence of the groove in the passage 28 means that Eidsmore is not at all concerned with turbulence and cavitation that may be created by a groove.

Additionally, an Eidsmore type of connection would strive to maximize the interengaged surface areas of the drive member 70 and the inclined surface 54 of the coupling nut 18. Hence, the drive member 70 extends forwardly beyond the cylindrical section 22 of the pipe 12.

The office action states that the skilled artisan would combine the drive member of 70 into the Takikawa et al. structure "in order to ensure tightening". However, neither Takikawa et al. nor the claimed invention rely upon any structure surrounding the cylindrical surface of the connecting edge "to ensure tightening". Unlike Eidsmore, neither the claimed invention nor Takikawa et al. wants two oppose sliding ramped surfaces to urge one member radially inwardly against the pipe. Connections of the Takikawa et al. type and the subject invention rely entirely upon axial forces that urge the outwardly flared seat surface of the connecting head against a comparably configured counterpart member. In contrast to Eidsmore, the cylindrical surface of the claimed sleeve washer is provided merely to achieve a selected radial thickness and corresponding resistance against pressure exerted by fuel flowing through the pipe without deforming the connecting head to an extent that will form a deep groove. More particularly, the claimed invention achieves

specified external dimensions for the connecting head by relying partly upon a portion of the sleeve washer that surrounds the connecting head of the main pipe. Thus, the main pipe can be deformed less, and the annular groove on the main pipe can be shallower and more rounded, thereby reducing turbulence and cavitation problems.

The claimed invention specifically would not want the sleeve washer to extend axially beyond the cylindrical surface of the connecting head, because such an axial extension could impede the mating of the outwardly flared seat surface with a comparable pressure receiving seat of a counterpart member. In contrast, Eidsmore wants to maximize engagement surfaces between its drive member 70 and the coupling nut 18 "to ensure tightening" as stated by the Examiner. Amended claim 5 more clearly defines that the sleeve washer has "opposite first and second ends", and has "a portion of said sleeve washer extending from the first end toward the second end thereof surrounding and closely engaging at least a portion of said cylindrical surface of said connecting head". Hence, unlike Eidsmore, the claimed invention does not extend axially forward of the cylindrical portion of the connecting head.

As acknowledged by the Examiner, the Takikawa et al. reference does not have a sleeve washer that surrounds the cylindrical portion of the connecting head. The Examiner relies entirely upon Eidsmore for overcoming the Takikawa et al. deficiency. It is submitted that the hypothetical combination would have the Eidsmore drive member 70 that extends forwardly beyond the cylindrical portion of the connecting head. Any other configuration would require the skilled artisan to make still further changes that would be inconsistent with the Eidsmore objectives of maximizing inward ramping forces created by the engagement of the drive member 70 and the coupling nut 18. Nothing in Eidsmore

would suggest such a revision that would make Eidsmore less suitable for its intended purpose. More significantly, neither of the references nor their combination suggests the important aspect of the claimed invention which enables the formation of a connecting head with an annular groove that is less severe and less likely to create turbulence and cavitation. The skilled artisan familiar with problems relating to turbulence and cavitation would not look to a reference that has a drive member with an entirely different shape and performing an entirely different function.

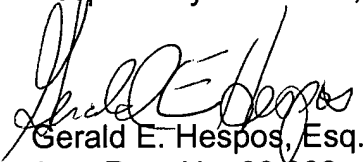
Additionally, the Eidsmore reference absolutely requires the outer surface of the drive member 70 to be conically generated. A cylindrical outer surface on the drive member 70 of Eidsmore would make the drive member 70 inoperative. Thus, the skilled artisan would be required to combined the Eidsmore drive member 70 into a Takikawa et al. connector and to change the shaped of the Eidsmore drive member in a manner that would make the altered structure incapable of performing the driving function that is essential to Eidsmore.

All of the preceding assessment assumes that the skilled artisan is aware of the cavitation related problems attributed to the annular groove in the Takikawa et al. pipe. The prior art has no evidence of recognition of this problem by the skilled artisan. The rejection, therefore, would require the skilled artisan to deduce that the drive member provided in Eidsmore for clamping could somehow be redesigned in a manner that would make the drive member unsuitable for its stated purpose and incorporated into the Takikawa et al. structure for purposes of solving a problem that the prior art does not recognize. It is believed that such a combination and reconfiguration of references goes well beyond the ample case law that interprets 35 USC 103(a). More particularly, it is

submitted that the invention defined by amended independent claim 5 and its dependent claims is not taught or suggested by the hypothetical combination of Takikawa et al. and Eidsmore.

For these reasons, it is submitted that the invention defined by the amended claims is directed to patentable subject matter and allowance is solicited. The Examiner is urged to contact applicant's attorney at the number below to expedite the prosecution of this application.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Gerald E. Hespos", is written over the typed name.

Gerald E. Hespos, Esq.

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"Version with markings to show changes made."

--5. (amended) A high-pressure pipe assembly, comprising a metal pipe having opposite first and second ends, a connecting head adjacent said first end, said connecting head having a seat surface flared outwardly from said first end and a cylindrical surface extending from said seat surface away from said first end, said cylindrical surface having a selected outside diameter, a cylindrical body extending from said connecting head toward said second end, said cylindrical body having an outside diameter less than said selected outside diameter of said cylindrical surface of said connecting head, a passage extending centrally through said metal pipe from said first end to said second end, portions of said passage within said connecting head defining an annular groove spaced from said first end, said assembly further comprising a unitarily formed sleeve washer having opposite first and second ends, a portion of said sleeve washer extending from said first end toward said second end thereof having a cylindrical inner surface surrounding and closely engaging at least a portion of said cylindrical surface of said connecting head, said sleeve washer further having a cylindrical outer surface facing oppositely from said cylindrical inner surface and extending substantially from said first end of said sleeve washer to a location aligned with said cylindrical body of said metal pipe, and portions of said sleeve washer adjacent said second end thereof having a thick-walled cylindrical portion with a cylindrical inner surface surrounding and closely engaging portions of said cylindrical body adjacent said connecting head, an annular bearing surface extending substantially orthogonally between said cylindrical inner surface of said thick-wall cylindrical portion and said cylindrical outer surface of said sleeve washer.--